YORK SCHOOL BUILDING, SCHOOL DISTRICT 91 (PWS 7100123)
SOURCE WATER ASSESSMENT FINAL REPORT

October 30, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land-use inventory of the designated source water assessment area and sensitivity factors associated with the wells and aquifer characteristics in the area.

This report, *Source Water Assessment for York School Building, School District 91*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The York School Building, School District 91 drinking water system consists of one groundwater well. Well #1 has a high susceptibility rating for inorganic, volatile organic, synthetic organic, and microbial contamination due to aquifer properties, unknown construction properties, high countywide agricultural chemical use, and the presence of potential sources of contaminants in the source water assessment area. The well has no confirmed detections of microbial contamination, volatile organic contamination (VOC), or synthetic organic contamination (SOC) during any water chemistry tests thus far.

From April 1995 to May 1999, the inorganic contaminants (IOCs) barium, fluoride, and arsenic were detected in water samples collected from well #1 at concentrations well below the current Maximum Contaminant Level (MCL). Nitrate concentrations in well #1 are well below the MCL for nitrate. Despite the lack of significant contamination in the well water, York School Building, School District 91 should be aware that the potential for contamination still exists. Surrounding agricultural land use practices, high county-wide agricultural chemical use, and potential contaminant sources in the source water assessment areas pose a potential threat to the quality of the source water for the York School Building, School District 91 wells. In addition, the source water assessment area for the York School Building, School District 91 well crosses an organics priority area for the synthetic organic pesticide atrazine.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For York School Building, School District 91, source water protection activities should focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Additionally, there should be a focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area and awareness of the potential contaminant sources in the area. Since much of the designated protection area is outside the direct jurisdiction of York School Building, School District 91, it is important that partnerships with industry groups and state and local agencies be established. These collaborative efforts are critical to the success of source water protection. The well should adhere to sanitary survey standards regarding wellhead protection.

Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any source water protection plan as the delineation is near to urban and residential land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. As there are transportation corridors near the delineations, the Department of Transportation should be involved in protection activities. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive source water assessment protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR YORK SCHOOL BUILDING, SCHOOL DISTRICT 91, BONNEVILLE COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are included in this report. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the York School Building, School District 91 is comprised of one ground water well that serves approximately 50 people through 1 connection. The well is located south of Idaho Falls, Idaho (Figure 1).

There are no significant water chemistry problems in the ground water. In April 1995 and again in September 1998, fluoride was detected in water samples collected from well #1 at concentrations of 0.42 milligrams per liter (mg/L) and 0.47 mg/L, respectively. In September 1998, barium was detected in a water sample at a concentration of 0.11 mg/L. In September 1998 and again in May 1999, arsenic was detected in water samples at concentrations of 0.006 mg/L and 0.007 mg/L, respectively. These detections are well below the current MCLs for arsenic (0.05 mg/L), barium (2.0 mg/L), and fluoride (4.0 mg/L). The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates.

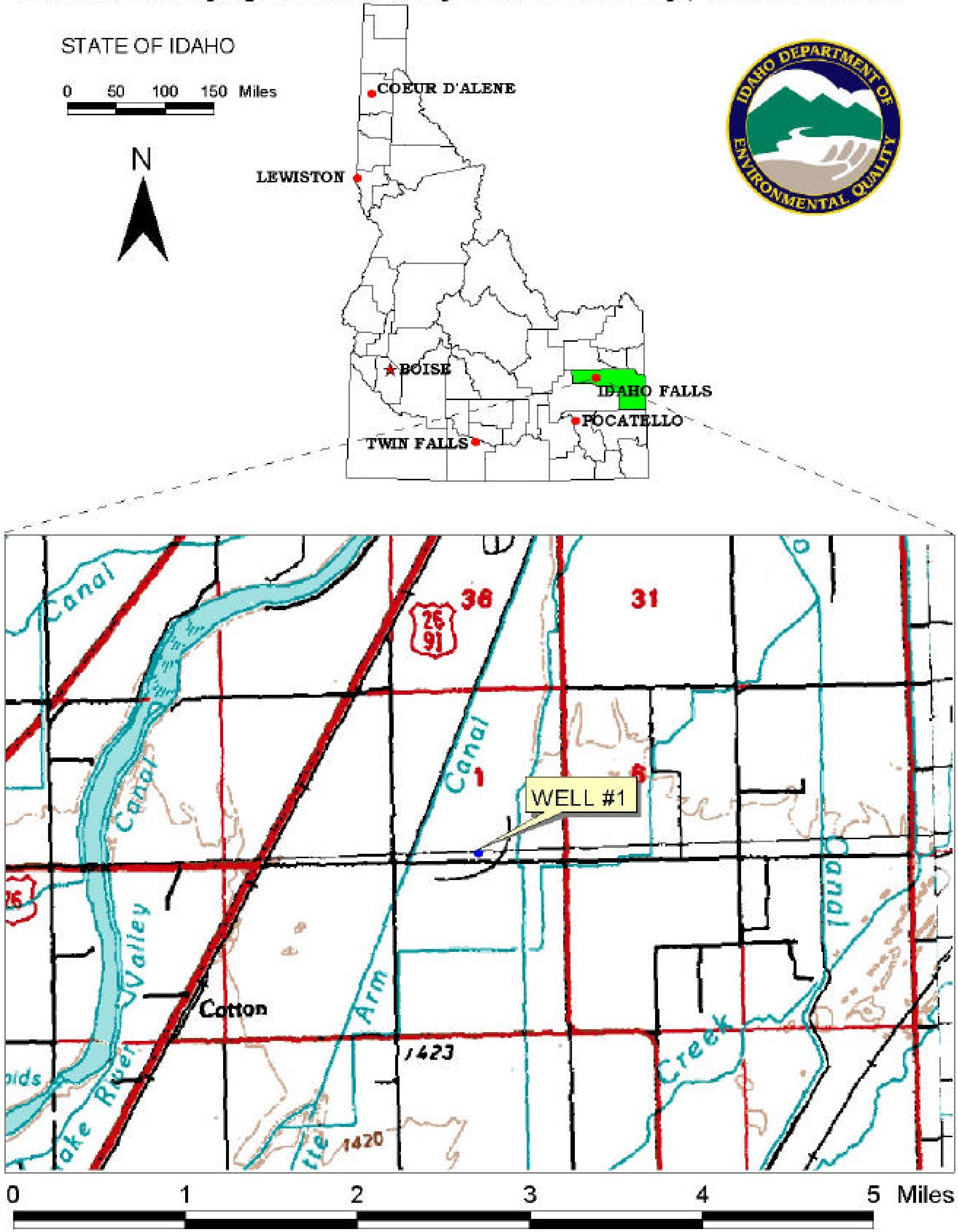
From April 1995 to July 2000, nitrate was detected in six water samples at concentrations ranging from 1.37 mg/L to 1.90 mg/L. These nitrate detections are below the MCL for nitrate of 10 mg/L. No confirmed detections of VOCs, SOCs, or microbial contaminants have been recorded for the well water thus far. An SOC priority area for the pesticide atrazine crosses the delineated source water assessment area. In addition, county wide agricultural chemical use is high for this area.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using the refined computer model, Wellhead Analytical Element Model (WHAEM) approved by the EPA in determining the source approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Eastern Snake River Plain (ESRP) aquifer in the vicinity of the York School Building, School District 91 well. The computer model used site specific data, assimilated by WGI from a variety of sources including the York School Building, School District 91 operator report, other local area well logs, and hydrogeologic reports (detailed below).

The ESRP is a northeast trending basin located in southeastern Idaho. Ten thousand square miles of the basin are primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with terrestrial and lake deposited sediments along the margins (Garabedian 1992, p. 5). Individual basalt flows range from 10 to 50 feet in thickness and average 20 to 25 feet (Lindholm 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

FIGURE 1. Geographic Location of York School Bldg., School Dist. 91



The plain is bound on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. Rivers and streams entering the plain from the south are tributary to the Snake River. Rivers entering from the north vanish into the basalts of the Snake River Plain aquifer.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet it may be locally confined in some areas because of inter-bedded clay and dense unfractured basalt (Whitehead 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gallons per minute (gpm) are common for wells open to less than 100 feet of the aquifer. Lindholm (1996 p. 18) estimates aquifer thickness to range from several hundred feet near the plain's margin to thousands of feet near the center.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman 1995, p. 4, and Garabedian 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

Regional ground water flow is to the southwest paralleling the basin (Cosgrove et al. 1999, p. 21; deSonneville, 1972, p. 78; Garabedian 1992, p. 48; and Lindholm 1996, p. 23). Ground water flow direction at the local scale is thought to be highly variable due to preferential flow paths through the fractured and layered basalts.

The delineated source water assessment area for the York School Building, School District 91 well can best be described as a corridor approximately 0.2 miles wide at the wellheads to 3.9 miles wide where they intersect the Snake River, 22.5 miles to the northeast (Figure 2). The delineation only contains the 3 and part of the 6-year time of travel zones (TOT) because the Snake River is assessed to be the main source of the wells' water. The actual data used by WGI in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the York School Building, School District 91 wellheads consists of residential, commercial, and light industrial land use, while the surrounding area is predominantly irrigated agriculture with urban land use to the north.   One major transportation corridor (Highway 26) and multiple irrigation canals cross the source water assessment areas of the wells.

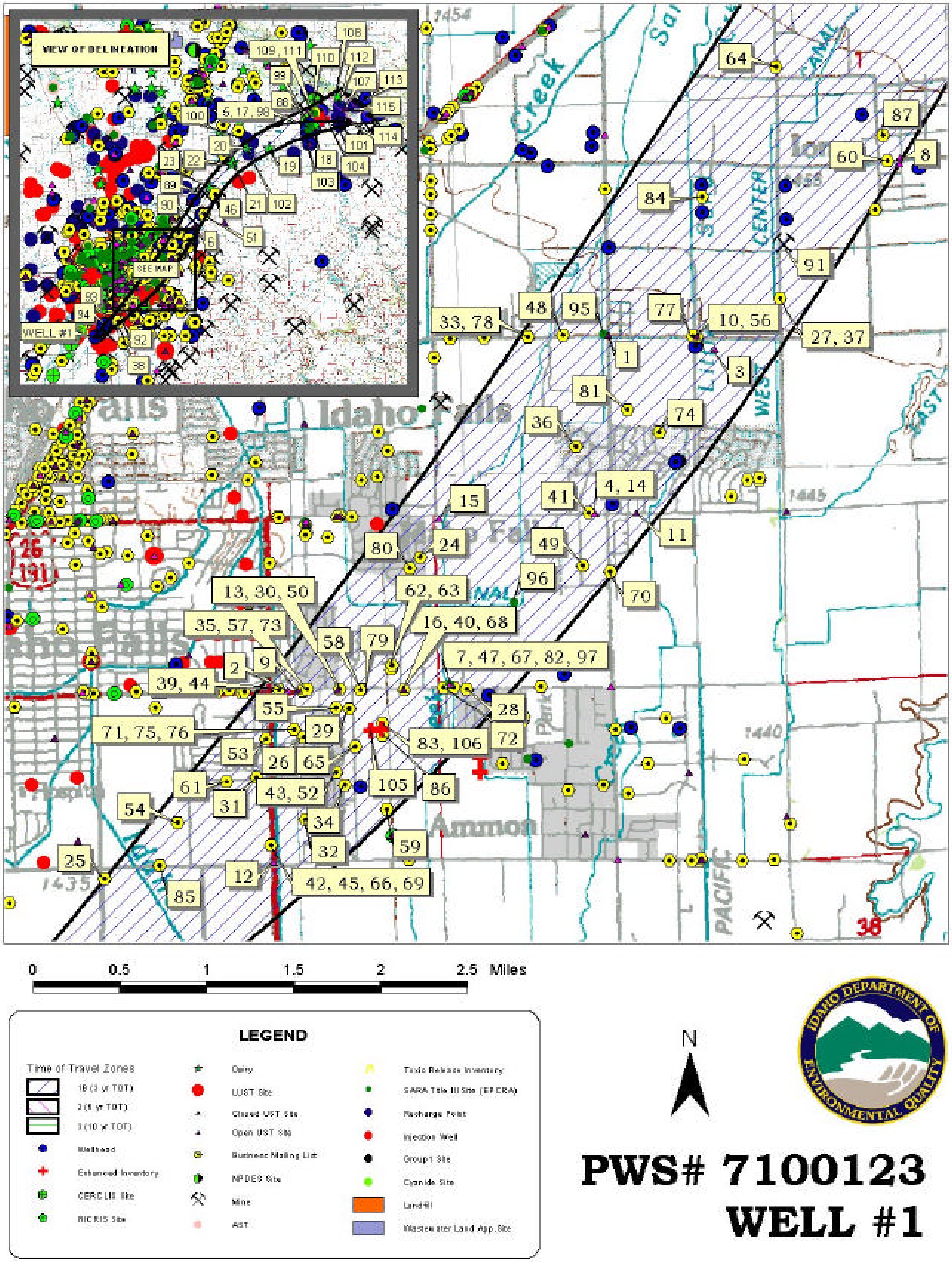
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the <u>potential</u> for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in May 2001. The first phase involved identifying and documenting potential contaminant sources within the York School Building, School District 91 Source Water Assessment Areas (Figure 2) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water area encompasses a corridor of land between the well site and the Snake River. The delineated source water assessment area for well #1 (Table 1, Figure 2) contains one hundred and seventeen (117) potential contaminant sources. These sources include: Underground Storage Tank (UST) sites, dairies, various businesses, sand and gravel mines, Superfund Amendment and Reauthorization Act (SARA) sites, a National Pollution Discharge Elimination System (NPDES) site, recharge areas, deep injection wells, a waste water land application site, a landfill, an Aboveground Storage Tank (AST) site, Highway 26, and the Snake River. There are also numerous irrigation canals that cross the delineation. If an accidental spill occurred on Highway 26, the Snake River, or the irrigation canals, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system due to the fractured nature of the basalt aquifer.

Figure 2. York School Building, School District 91, Delineation Map and Potential Contaminant Source Locations



PWS# 7100123

WELL #1

Table 1. Inventory of potential sources that may contaminate the York School Building, School District 91 Well #1.

Site #	Source Description	TOT Zone[1]	Source of Information	Potential Contaminants[2]
1	UST[3] Site, Gas Station; Closed	0-3	Database Search	VOC, SOC
2	UST Site, Gas Station; Open	0-3	Database Search	VOC, SOC
3, 56	UST Site, Farm; Open	0-3	Database Search	IOC, VOC, SOC, Microbes
4, 14, 41	UST Site, Gas Station; Open; Car Washing & Polishing	0-3	Database Search	IOC, VOC, SOC
5, 103	UST Site, Gas Station; Open; AST[6] Site	0-3	Database Search	VOC, SOC
6	UST Site, Farm; Closed	0-3	Database Search	VOC, SOC
7	UST Site, Gas Station; Open	0-3	Database Search	VOC, SOC
8	UST Site, Not Listed; Open	0-3	Database Search	VOC, SOC
9	UST Site, Gas Station; Closed	0-3	Database Search	VOC, SOC
10	UST Site, Other; Closed	0-3	Database Search	VOC, SOC
11	UST Site, Not Listed; Closed	0-3	Database Search	VOC, SOC
12	UST Site, Gas Station; Open	0-3	Database Search	VOC, SOC
13	UST Site, Other; Closed	0-3	Database Search	VOC, SOC
15	UST Site, Gas Station; Open	0-3	Database Search	VOC, SOC
16, 40, 68	UST Site, Mall; Closed; Photo Finishing-Retail; Photographers-Portrait	0-3	Database Search	VOC, SOC
17, 98	UST Site, Gas Station; Open; SARA[5] Site	0-3	Database Search	VOC, SOC
18	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
19	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
20	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
21	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
22	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
23	Dairy <=200 cows	0-3	Database Search	IOC, Microbes
24	Pest Control	0-3	Database Search	IOC, VOC, SOC
25	Limousine Service	0-3	Database Search	VOC, SOC
26	Plumbing Drain & Sewer Cleaning	0-3	Database Search	IOC, VOC, SOC, Microbes
27, 37	Trapping Equipment & Supplies; Fur Farms	0-3	Database Search	IOC, Microbes
28	Taxidermists	0-3	Database Search	IOC, VOC, SOC
29	Laboratories-Medical	0-3	Database Search	IOC, VOC, SOC, Microbes
30, 50	Hospitals	0-3	Database Search	IOC, VOC, SOC, Microbes
31	Packaging Machinery-Wholesale	0-3	Database Search	IOC
32	Trucking-Liquid & Dry Bulk	0-3	Database Search	IOC, VOC, SOC
33	Paving Contractors	0-3	Database Search	IOC, VOC, SOC
34	Water Treatment Equip Service & Supplies	0-3	Database Search	IOC, VOC, SOC
35	Tire-Dealers-Retail	0-3	Database Search	IOC, VOC, SOC
36	Building Contractors	0-3	Database Search	IOC, VOC, SOC
38	Machine Shops	0-3	Database Search	IOC, VOC, SOC
39	Automobile Parts & Supplies-Retail	0-3	Database Search	IOC, VOC, SOC
41	Car Washing & Polishing	0-3	Database Search	IOC, VOC, SOC
42	Veterinarians	0-3	Database Search	IOC, VOC, SOC, Microbes
43	Labels-Paper (Manufacturers)	0-3	Database Search	IOC, VOC, SOC
44	Cleaners	0-3	Database Search	VOC
45	Veterinarians	0-3	Database Search	IOC, VOC, SOC, Microbes
46	General Contractors	0-3	Database Search	IOC, VOC, SOC
47	Storage-Household & Commercial	0-3	Database Search	IOC, VOC, SOC, Microbes
48	Tile-Ceramic-Contractors & Dealers	0-3	Database Search	IOC, VOC, SOC
49	Home Builders	0-3	Database Search	IOC, VOC, SOC
51	Steel Erectors	0-3	Database Search	IOC, VOC, SOC

Site #	Source Description	TOT Zone[1]	Source of Information	Potential Contaminants[2]
52	Plastics & Plastic Products (Manufacturers)	0-3	Database Search	VOC, SOC
53	Typesetting (Manufacturers)	0-3	Database Search	IOC, VOC, SOC
54	Concrete Contractors	0-3	Database Search	IOC, VOC, SOC
55	Landscape Contractors	0-3	Database Search	IOC, VOC, SOC
57	Laboratories-Dental	0-3	Database Search	IOC, VOC, SOC, Microbes
58	Photo Finishing-Retail	0-3	Database Search	VOC
59	X-Ray Laboratories-Medical	0-3	Database Search	IOC, VOC
60	Grain Elevators	0-3	Database Search	IOC, VOC, SOC, Microbes
61	Pest Control	0-3	Database Search	IOC, VOC, SOC
62	Paint-Retail	0-3	Database Search	IOC, VOC, SOC
63	Automobile Detail & Clean-Up Service	0-3	Database Search	IOC, VOC, SOC
64	General Contractors	0-3	Database Search	IOC, VOC, SOC
65	Home Builders	0-3	Database Search	IOC, VOC, SOC
66	Veterinarians	0-3	Database Search	IOC, VOC, SOC, Microbes
67	Automobile Parts & Supplies-Retail	0-3	Database Search	IOC, VOC, SOC
69	Veterinarians	0-3	Database Search	IOC, VOC, SOC, Microbes
70	Excavating Contractors	0-3	Database Search	IOC, VOC, SOC
71, 75, 76	Laboratories-Medical; X-Ray Laboratories-Medical	0-3	Database Search	IOC, VOC, SOC, Microbes
72	Car Washing & Polishing	0-3	Database Search	IOC, VOC, SOC
73	Electric Equipment & Supplies-Wholesale	0-3	Database Search	IOC, VOC, SOC
74	Painters	0-3	Database Search	IOC, VOC, SOC
77	Meat Processing	0-3	Database Search	IOC, VOC, Microbes
78	General Contractors	0-3	Database Search	IOC, VOC, SOC
79	Automobile Repairing & Service	0-3	Database Search	IOC, VOC, SOC
80	Publishers-Directory & Guide	0-3	Database Search	IOC, VOC, SOC
81	Printers	0-3	Database Search	IOC, VOC, SOC
82	Truck Renting & Leasing	0-3	Database Search	IOC, VOC, SOC
83	Automobile Lubrication Service	0-3	Database Search	IOC, VOC, SOC
84	Automobile Repairing & Service	0-3	Database Search	IOC, VOC, SOC
85	Dairies	0-3	Database Search	IOC, Microbes
86	Laboratories-Dental	0-3	Database Search	IOC, VOC, SOC, Microbes
87	Trucking-Heavy Hauling	0-3	Database Search	IOC, VOC, SOC
88	NPDES[4] Site, Municipal discharge	0-3	Database Search	IOC, Microbes
89	Mine, Sand & Gravel	0-3	Database Search	IOC, VOC, SOC
90	Mine, Sand & Gravel	0-3	Database Search	IOC, VOC, SOC
91	Mine, Sand & Gravel	0-3	Database Search	IOC, VOC, SOC
92	Deep Injection Well, Active	0-3	Database Search	IOC, VOC, SOC
93	Deep Injection Well, Active	0-3	Database Search	IOC, VOC, SOC
94	Deep Injection Well, Active	0-3	Database Search	IOC, VOC, SOC
95	SARA Site, Gasoline Service Station	0-3	Database Search	VOC, SOC
96	SARA Site, Well No. 8	0-3	Database Search	IOC, VOC, SOC, Microbes
97	SARA Site, Gasoline Service Station	0-3	Database Search	VOC, SOC
99	SARA Site, US West Communications	0-3	Database Search	IOC, VOC, SOC
100	Recharge Site, Unused	0-3	Database Search	IOC, VOC, SOC
101	Recharge Site, Unused	0-3	Database Search	IOC, VOC, SOC
102	Recharge Site, Unused	0-3	Database Search	IOC, VOC, SOC
104	Landfill, Municipal, Closed	0-3	Database Search	IOC, VOC, SOC, Microbes
105	Hampton Inn	0-3	Enhanced Inventory	VOC
106	Holiday Inn Express	0-3	Enhanced Inventory	VOC
107	UST Site, Farm; Closed	3-6	Database Search	VOC, SOC

Site #	Source Description	TOT Zone[1]	Source of Information	Potential Contaminants[2]
108	Dairy <=200 cows	3-6	Database Search	IOC, Microbes
109	Potatoes-Processed	3-6	Database Search	IOC, VOC, SOC, Microbes
110	Mine, Sand & Gravel	3-6	Database Search	IOC, VOC, SOC
111	SARA Site, Idaho Pacific Corporation	3-6	Database Search	IOC, VOC, SOC
112	Recharge Site, Unused	3-6	Database Search	IOC, VOC, SOC
113	Recharge Site, Unused	3-6	Database Search	IOC, VOC, SOC
114	Recharge Site, Unused	3-6	Database Search	IOC, VOC, SOC
115	Wlap[7] Site, Idaho Pacific Corporation	3-6	Database Search	IOC, VOC, SOC, Microbes
116	Borrow pit, Landfill, Storage Area, Truck Wash	3-6	Enhanced Inventory	IOC, VOC, SOC
	Highway 26	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Snake River	3-6	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
[3] UST = Underground Storage Tank
[4] NPDES = National Pollution Discharge Elimination System
[5] SARA = Superfund Amendment and Reauthorization Act
[6] AST = Aboveground Storage Tank
[7] Wlap = Waste Water Land Application

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment 'A' consists of the susceptibility analysis worksheet that DEQ has used to determine your system's susceptibility ranking. These results are summarized on table 2 of this report. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for the well (Table 2). This is a result of the soils being in the moderately to well-drained class, the fact that the water table is less than 300 feet from the surface, and the lack of laterally extensive low-permeability units to retard the downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The well has a moderate system construction scores (Table 2). According to the 1996 sanitary survey, the well is located outside of the 100-year floodplain and is protected from flooding.

No well log was available for the well, making it impossible to determine whether or not the well meets current public water system (PWS) construction standards. While the well may have been in compliance at the time it was installed, the Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction.

Potential Contaminant Source and Land Use

The well rates high for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products), and SOCs (i.e. pesticides), and moderate for microbial contaminants (i.e. bacteria). Agricultural land use, high county wide agricultural chemical use, and multiple potential contaminant sources (see Table 1) in the delineated source water area accounts for the potential contaminant inventory rating.

The well falls within the SOC priority area for the pesticide atrazine. The well is also in a county with high levels of nitrogen fertilizer use, high herbicide use, and high total agricultural chemical use. Fortunately, no significant water chemistry problems have been recorded in the finished well water thus far.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead indicates that a pathway for contamination already exists and therefore a high susceptibility rating is assigned regardless of land use of the area. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, your system rates high for all categories.

Table 2. Summary of the York School Building, School District 91 susceptibility evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
Well		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	H	H	M	M	H	H	H	H

[1]**H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,**
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Aquifer properties, unknown well construction properties, intense agricultural practices, the high county wide use of agricultural chemicals, and the presence of potential contaminant sources (Table 1) all contribute to the high susceptibility rating. Though there are no significant water chemistry problems recorded for the source water to date, there have been detections in the finished well water of the IOCs arsenic, barium, fluoride and nitrate at levels below the current MCL. The well falls within the SOC priority area for the pesticide atrazine. No VOCs or SOCs have been detected in the well water thus far.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. For York School Building, School District 91, source water protection activities should focus on correcting any deficiencies outlined in the sanitary survey. Additionally, there should be a focus on the implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area and awareness of the potential contaminant sources in the area. Since much of the designated protection area is outside the direct jurisdiction of York School Building, School District 91, it is important that partnerships with state and local agencies, and industry groups be established. These collaborative efforts are critical to the success of source water protection. The well should adhere to sanitary survey standards regarding wellhead protection.

Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the short term. Drinking water protection activities for agriculture should be coordinated with the Idaho Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service. The Environmental protection Agency (EPA) makes available its Drinking Water Academy for source water protection to all public water systems. It ‘s important to utilize these resources because a community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection program.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Cosgrove, D.M., G.S. Johnson and S. Laney 1999, Description of the IDWR/UI Snake River Plain Aquifer Model (SRPAM), Idaho Water Resources Research Institute, 95 p.

DeSonneville, J.L.J. 1972, Development of a Mathematical Groundwater Model: Water Resources Research Institute, University of Idaho, Moscow, Idaho, 227 p.

Garabedian, S.P., 1992 Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho, U.S. Geological Survey Professional Paper 1408-F, 102 p.

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Idaho Department of Agriculture 1998. Unpublished Data.

Idaho Department of Environmental Quality 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

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Lindholm, G.F. 1996, Summary of the Snake River Plain Regional Aquifer-System Analysis in Idaho and Eastern Oregon, U.S. Geological Survey Professional Paper 1408-A, 59 p.

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Attachment A

York School Building, School District 91
Susceptibility Analysis
Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report   Public Water System Name : SCHOOL DIST 91 YORK SCHOOL BLDG Well# : WELL #1
Public Water System Number   7100123   8/27/01 2:11:23 PM

1. System Construction		SCORE			
Drill Date	1/1/38				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES	1996			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
	Total Hydrologic Score	6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A	4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	72	82	78	22
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	13	20	6	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B	16	16	18	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II	5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III	2	2	2	0
Cumulative Potential Contaminant / Land Use Score		27	25	29	14
4. Final Susceptibility Source Score		15	15	16	15
5. Final Well Ranking		High	High	High	High